HIND BOLT R

RESIN CAPSULE FOR ROCK STABILIZATION

HINDCON CHEMICALS LTD.
STRENGTH UPON STRENGTH

DESCRIPTION

Hind Bolt R is a fast setting sausage shaped composite cartridge, containing special grade of isophthalic polyester resin and a floating inner tube, filled with catalyst in accurately measured quantities. The two components are housed in a single pouch and yet isolated from each other. When punctured and torqued by a reinforcing rod, the fragile tube breaks, the resin and catalyst thus get homogeneously mixed and the phenomenon of curing by cross linking sets in. The gel point under exothermic conditions is reached within 1 to 3 minutes, as per specific requirements and the annular space between the bore hole wall and rock bolt is filled with a tough thermo set resin matrix. This stitches the mother substrate or anchors the bolt and stabilizes the support system permanently, achieving a **Pull-out load as high as 100MT per Running Meter and Pull out Bond Strength of 20 N/mm^2.**

USES

Hind Bolt R is used to counter the load and squeezing phenomenon occurring from the reducing residual stress of the rock, after blasting, in a mining or tunneling operation. It reinforces rock strata and prevents freshly exposed overhead rock from collapsing, after each blast.

ADVANTAGES

- Increases stand-up time of unsupported span in tunneling.
- Suitable for a wide range of rocks, even with low RMR.
- Ideal for fast tunneling work as per NATH.
- Pre-determinable setting times.
- High early and final strengths, achievable in minutes.
- Inert to mother substrates after reaction.
- Sets as a monolithic mass, even in vibrating and moist conditions.
- No danger of chemical attacks or fire, to environments.
- Resistant to salt water, oil, acid, alkali, greases and solvents.
- Ideal in underground coal mining operations, hydel projects, traffic tunnels.

APPLICATION

- Bore a hole by drilling to correct depth and diameter as recommended.
- Clean the hole thoroughly with compressed air and/or water.
- Insert appropriate number of capsules one by one to the end of the hole.
- Attach bolt to rotary machine by means of a spinning adapter and commence rotating/torque progressively, through capsules until the end of the hole is reached. Detach drill from spinning adapter (Recommended speed of the rotation 150-250 r.p.m)
- Leave bolt undisturbed until resin has cured.
- Remove adapter.
- After 24 hours tighten the rock bolts finally & the hole is grouted.

PROPERTIES

Color	Yellow/white
Size	Cylindrical sausages, custom-made to suit the requirement.
Setting time	3 minutes (excluding mixing time of 1 minute with Resin & Hardener)

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Compressive Strength	After	1 hour - 50 to 70 N/mm²
	After	24 hours - 53 to 72 N/mm²
Tensile Strength At	7 days	30 N/mm² (minimum)
Pull out load	100 MT/running meter	
Pull out Bond Strength	20 N/mm²m	

GUIDELINES

TABLE A

(Typical results based o 25mm Dia Rock Bolt used)

Ultra High Strength Granite Rocks unconfined Compressive Strength 100 N/mm²		High strength Lime stone (calcarious) Rocks unconfined Compressive strength 50N/mm²		Medium strength sand stone (Quartzite)Rocks unconfined Compressive strength 15 N/mm²		Moderately weak strength Mudstone Rocks unconfined compressive strength 7.5 N/mm²	
Anchorage Length (mm)	Average Load (MT)	Anchorage Length (mm)	Average Load (MT)	Anchorage Length (mm)	Average Load (MT)	Anchorage Length (mm)	Average Load (MT)
230	**9**	**290**	**8**	**400**	**4.5**	**640**	**4.5**
270	**11.5**	**360**	**12**	**500**	**9.0**	**700**	**6.5**
300	**17.5**	**450**	**18**	**635**	**12.0**	**760**	**8.5**
350	**20.0**	**500**	**23**	**765**	**18.0**	**890**	**10.5**
				890	**23.0**	**1000**	**13.5**

The Chart given below demonstrates **'HIND BOLT R'** Resin capsule usage chart (site trial data basis)

TABLE B

Hole diameter (in mm)	**25**	**32**	**35**	**38**	**41**	**38**	**41**	**45**	**50**	**64**
Capsule diameter (in mm)	**23**	**29**	**32**	**32**	**32**	**35**	**35**	**40**	**40**	**55**
Bolt diameter (in mm)	Anchorage Length using Single Capsule (in mm) of **HIND BOLT R**									
19	**380**	**330**								
22		**400**	**350**			**315**				
25		**565**	**440**	**315**		**390**	**290**	**300**	**320**	**340**
29				**400**	**290**	**490**	**350**	**340**		
30					**390**		**465**	**425**		
32								**525**	**550**	**560**
35								**570**		

Note: We can manufacture Hind Bolt R as per desired diameters & length.

SHELF LIFE

3 months from the date of manufacture.

Extended Shelf life can be achieved for 6 months if the following guidelines are followed:

a) If stored at room temperature below 27°C.

b) If protected from direct sunlight.

c) If protected from other sources of heat.

d) Testing of Compressive Strength can be done from time to time (within the shelf life 3-6 months) to check The quality of the material, if any solidification of the inner materials are found.

PACKING

In Cardboard/Wooden Box.

HANDLING PRECAUTION

Hind Bolt R Cartridges are made of plastic film packing containing an inner glass tube. Care should be taken while handling or installation that it does not get pierced by sharp objects and the inner glass tube does not break.

IMPORTANT NOTICE :

Hindcon Chemicals maintains a team of technically trained professionals to provide full support to your problems in construction, and recommend the correct product to suite your specific requirements. Our authorized applicators can attend your site for application of the products. The content of the Technical datasheet are for general information and guideline. The result shown here are generated from our laboratory or from our site experiences.

Quality of our products are maintained as per ISO9001:2008 recommendations and continuous researches. The behaviour can change as per the prevailing conditions at the time of applications. Since **HINDCON CHEMICALS LIMITED** has no control over the use to which the users may put the material, it does not claim or warrant that in the user's particular circumstances, the result that the user will obtain from the product will be the same as those described in this communication or that the user will find the information or recommendations complete, accurate or useful. The client must test and ascertain the safety and fitness for the product for use. The right to change the properties of the products is reserved with us. The proprietary rights of third parties must be observed. All orders are accepted subject to the terms of sale and delivery. Users must always refer to the most recent issue of the latest Data Sheet for the product concerned, copies of which will be supplied on request.

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